

New Jersey Sea Grant Consortium
STRATEGIC PLAN 2009-2013

BACKGROUND

With 127 miles of Atlantic coastline and 1,792 miles of tidal shoreline including Delaware Bay, New Jersey is truly a coastal state. More than 80% of its counties (17 out of 21) border tidally-influenced estuarine or oceanic waters. Eighteen percent of its land area is classified as coastal by the Coastal Zone Management Program. This percentage ranks New Jersey fifth among all of the states. Although fourth smallest in area, New Jersey is the most densely populated state in the country. It is also fully within the New York-New Jersey Metropolitan area, one of the most highly urbanized and industrialized regions in the nation. The health and management of New Jersey's coastal waters is coupled tightly to these demographics.

As with many other coastal states, New Jersey's economy is largely dependent upon its marine and coastal resources. In addition to the shoreline along the Atlantic Ocean which supports New Jersey's tourism and boating and fishing industries, the state's waters also host two of the nation's largest ports as well as nine commercial fishing ports. The value of the industries supported by these environments is extraordinary, with port commerce supporting a \$50 billion industry; coastal tourism at \$28 billion (generating over \$8 billion in state revenue), and commercial fisheries and aquaculture accounting for more than \$1 billion. These industries retain a workforce of more than 1.5 million individuals at a per capita income among the highest in the nation. The coast is also the primary recreational outlet for New Jersey's nearly 9 million residents as well as the more than 91 million people who live within a four-hour drive. The coastally-dependent economy of New Jersey is intimately tied to the quality and condition of the state's beaches, coastal infrastructure, accommodations, water quality, fishery health, deep-draft harbors and port facilities. Balancing economic growth, development, re-development and coastal resource quality is *the* critical issue for the future of New Jersey's coastal communities, ports and fisheries.

Numerous competing issues and uses have resulted, not surprisingly, in intense competition for New Jersey's coastal lands, waters and resources. Relatively undisturbed regions are under increasing pressure from development and other anthropogenic impacts. New Jersey's coastal communities face enormous pressures to balance growth demand with the protection of their marine and coastal resources. In addition, because New Jersey's coastline is largely "built," human safety and coastal hazard mitigation is an area of ever-increasing importance statewide. In New Jersey's coastal areas especially, science-based management and effective public policy are essential to ensuring human health and preserving ecological services and productive uses.

HISTORY OF THE NEW JERSEY SEA GRANT CONSORTIUM

The New Jersey Sea Grant Consortium (NJSGC) was founded in 1969 as a cooperative center for the study of marine and marine-related environmental science. Today, it is one of the largest alliances of its kind in the United States, boasting a membership of about two dozen colleges, universities and other groups that share and support the vision and mission of the organization.

Since its inception, the Consortium has served the state and the region by developing programs designed to resolve coastal issues, develop marine technologies, formulate science-based policy, and improve marine science literacy among its citizens. Through its New Jersey Sea Grant Program (NJSJG), the organization has contributed leading research in the fields of marine and marine-related environmental science since 1976. In recognition of its academic and scientific achievements, New Jersey Sea Grant Consortium was awarded Sea Grant College status in 1989.

The **vision** of NJSGC is a sustainable future for New Jersey's coastal environment. The **mission** of the organization is to promote responsible use of New Jersey's coastal and marine environment through research, education and outreach. Throughout its forty-year history, the organization has met its vision and mission through its research, education and extension programs.

INTEGRATION AND EXPANSION

NJSGC works to achieve greater impact for its activities through the cooperative efforts of its Communications, Extension and Education Departments. This integrated approach responds to the primary need to connect to and extend New Jersey Sea Grant-funded research from initiation to completion to a broad range of end-users. The Consortium's New Jersey Sea Grant Extension Program currently supports full-time an Extension Director, with expertise in marine ecology and coastal ecosystems, a Marine Recreation Agent, and a Shellfish Aquaculture Agent. Additional Agents are supported through Memoranda of Agreements (MOA's) that leverage limited Sea Grant dollars. A part-time Assistant Marine Recreation Agent is supported by a grant from NJDOT, Office of Maritime Resources. Two MOA's continue to support a Coastal Processes Specialist from Stevens Institute of Technology's Davidson Laboratory and two Water Resources Agents from Rutgers Cooperative Extension Program. The Consortium's Sea Grant Extension Program plans to further its capacity and capability in the future through additional agreements like these.

PROCESS for BUILDING STRATEGIC PLAN

NJSGC has taken action over the past two years to receive stakeholder input for its 2009-2013 strategic plan. A coastal processes stakeholder workshop was conducted at Stevens Institute of Technology that focused heavily on coastal and back bay inundation (storm flooding) and the development of pre- and post-response warning systems. At Monmouth University, another NJSGC member institution, a sustainable coastal communities stakeholder workshop was hosted that resulted in feedback for making

use of already available information, creating incentives for communities, fostering education, and developing community stewardship through water quality.

NJSGC also engaged in ongoing one-on-one interviews with commercial and recreational fishing interests and with aquaculturists. The organization continues to receive feedback from coastal stakeholders individually and at various workshops, conferences and symposia and from Sea Grant agent advisory groups. These coastal stakeholders are interested in better science, better education, better policy, socio-economic impacts, and public domain issues (e.g., working waterfronts).

To further develop these ideas and needs into a strategic plan, NJSGC worked with our program officer and members of the National Sea Grant Office and hosted a strategic and implementation planning retreat in March 2009 at Monmouth University. This retreat was facilitated by our NOAA partners at the Coastal Services Center and attended by extension, education and communication staff, board members, various stakeholders, and representatives from the National Sea Grant Office. Much of the dialogue at the planning retreat focused on a renewed commitment to integration of research, extension, education, and communications program components.

The outcome of these workshops, individual interactions, and the retreat have guided NJSGC's strategic goals and priorities in alignment with the four focus areas of the National Sea Grant Strategic Plan. For New Jersey, certain focus areas receive more attention, but all work planned is influenced by the continued urbanization of the coast and sustaining New Jersey's marine, estuarine and coastal environments. In addition, because the NJSGC is committed to advancing ocean literacy (identified also by NOAA as a strategic priority), and has long supported K-12, undergraduate, graduate and public education programs focused on greater understanding and appreciation of New Jersey's marine and coastal resources, education is integrated into each of the focus areas and is included as its own cross-cutting theme, OCEAN, ESTUARINE AND COASTAL ENVIRONMENTAL LITERACY (OECLE).

OUR GOALS AND STRATEGIES

Marine and coastal issues that are important to our stakeholders locally and across the state are emblematic of those across the nation. As such, we have selected and modified a subset of national goals and strategies that match the needs of New Jersey and are within our capability and capacity. These goals and strategies guide our implementation plan of research, education and outreach activities. The feedback received from our various boards and stakeholders has helped us to develop a comprehensive plan that will guide the work of NJSGC over the next four years and beyond. Continued guidance will maintain the vitality of this document in order to respond to any changes in stakeholder needs over time.

Because of changing stakeholder needs and our current capability and capacity, the planning process has lead NJS GC to highlight some focus areas over others. For example, NJS GC will prioritize its efforts on the national focus areas of Healthy Coastal Ecosystems and Sustainable Coastal Development. However, this is by no means a lessening of the importance of fisheries (Safe and Sustainable Seafood Supply) to New Jersey. Fisheries stakeholders have expressed their yet unmet needs and NJS GC will strive to address those needs through partnerships with other groups such as the NJ Department of Agriculture, Seafood Division and by seeking to implement an MOA in fisheries/aquaculture with one of our member institutions. NJS GC also wishes to point out that the work we are doing in each of the chosen focus areas is not mutually exclusive of one other. For instance, some of our planned outcomes/objectives in Sustainable Coastal Development target Clean Marinas utilizing best management practices in order to reduce the environmental impact of marina activities. The results of activities to meet these outcomes/objectives also have an impact on our outcomes/objectives in the focus areas of Healthy Coastal Ecosystems and Safe and Sustainable Seafood Supply. Additionally, outcomes in our Hazard Resiliency in Coastal Communities focus area contribute to outcomes in the Sustainable Coastal Development focus area.

Bringing the results of scientific research through outreach (extension and communications) and education to the people and decision makers of our State is the surest way to secure our vision of a sustainable future for New Jersey’s coastal environment. The following narrative describes our goals and strategies for each of the four national focus areas in relation to the needs within New Jersey.

HEALTHY COASTAL ECOSYSTEMS

New Jersey’s coastal ecosystems are increasingly challenged by development, non-point source pollution and other human activities that contribute to habitat loss, degraded water quality and a decline in fisheries. In order for our coastal stakeholders to make informed decisions, they must understand the importance and socio-economic value of healthy coastal ecosystems and they must understand the connection between human activities and their effects on the coastal environment. The ability to balance economic growth and other human needs while maintaining ecosystem health is critical to sustaining New Jersey’s coastal communities.

Goal: Sound scientific information and data to support ecosystem-based approaches to managing the land, water and living resources of New Jersey’s coastal environments is the first step in fostering an understanding of the connection between human activities and their effects on the coastal environment.

Strategies:

- ✓ Support research on ecosystem processes including the relationships between coastal stressors (e.g., water quality degradation, contaminants, harmful algal blooms, invasive species, and wetlands loss) and long-term human and ecosystem health.
- ✓ Partners at all levels will be included as we develop data, models, and training activities that support ecosystem-based planning and management approaches and share them with a wide variety of constituencies.

Goal: Widespread use of ecosystem-based approaches to managing land, water, and living resources in New Jersey's coastal areas.

Strategies:

- ✓ Continue to educate targeted groups by offering watershed and stormwater management education programs and by providing technical assistance to municipal officials who want to be proactive in their ecosystem-based approaches to managing the natural resources of their communities.
- ✓ NJSGC Extension agents, versed in both structural and non-structural best management practices, will conduct onsite technical workshops, participate in meetings, conduct site visits, help prepare engineering designs and lead community-based projects such as rain garden installation.
- ✓ Extension outreach activities will be designed to bring information in this focus area to the largest possible audience, including water resource managers, municipal planners and individuals who make decisions for themselves and their communities.
- ✓ NJSGC has been an active member of MACOORA and through this relationship will continue to support and disseminate sound science derived from MACOORA and MARCOOS on ecosystem health, fisheries, coastal inundation.
- ✓ NJSGC will cooperate with our NOAA partners and neighbors at National Marine Fisheries Service (James J. Howard Laboratory) to broadcast marine ecology and fisheries-related research to our stakeholders.

Goal: Ample information and related technical assistance to aid municipalities and other management entities seeking to restore the function and productivity of degraded ecosystems.

Strategies:

- ✓ Support research that will improve the effectiveness of ecosystem restoration and identify promising new restoration approaches and technologies.
- ✓ Provide technical support for citizens and businesses that need help with specific mitigation/restoration problems giving them access to the latest information and techniques.

- ✓ Provide life-long learning programs for people of all ages – learning that enhances understanding of coastal ocean environments and thus promotes the strongest possible sense of stewardship and understanding.

SUSTAINABLE COASTAL DEVELOPMENT

Many communities still lack the resources, tools and science-based information to adequately plan for and address current and imminent impacts associated with the escalating demands upon the resource base. As sustainable development principles are promoted, taught and encouraged, communities will be increasingly able to apply innovative ways to manage growth. By contributing solutions to coastal issues at the community level and encouraging growth balanced with environmental stewardship, NJSGC will help to empower communities to make sound science-based decisions for planning a sustainable future.

Strong policies for sustainable planning and development as well as commitment to the responsible use of coastal resources is the key to ensuring a viable coastal economy while maintaining the health of New Jersey's coastal environments.

Goal: Coastal communities that utilize sustainable development practices in order to preserve working waterfronts while offering an abundance of appropriate, accessible recreational and tourism opportunities.

Strategies:

- ✓ Continue our successful extension work that provides local communities with information and techniques to help them best manage and grow their waterfront-related economic activities.
- ✓ Increase the number of water dependant businesses applying best management practices so that this sector of users can reduce their impact on the coastal ecosystem.
- ✓ Preservation of access is imperative and NJSGC is poised to play a positive role by attending Public Access Work Group meetings, and by developing a Public Access website in order to educate citizens and waterfront operators alike of the laws governing access to our state's waters.

Goal: Coastal citizens, community leaders, and industries that recognize the complex inter-relationships between social, economic and environmental values in coastal areas and who work together to balance multiple uses and optimize environmental sustainability.

Strategies:

- ✓ Taking into account the varied needs for local community interaction, cooperation, and partnering to balance the multiple uses of, and demands upon, our coastal environment, NJSGC will seek to develop an MOA to support an additional agent to liaise and provide necessary tools and information to our communities, planners, and water dependant businesses.

Goal: Coastal communities that can make efficient use of land and water resources in order to protect these resources are needed to sustain coastal ecosystems and quality of life.

Strategies:

- ✓ Our core extension program along with our extension MOA's allow us to engage in activities regarding low impact development and stormwater management as a means to reduce the pressures on our coastal ecosystems.
- ✓ Create or provide tools and technologies which can guide or aid coastal communities to grow in ways that are sustainable and within their carrying capacity.

SAFE AND SUSTAINABLE SEAFOOD SUPPLY
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New Jersey's fishery and aquaculture resources contribute more than \$1 billion annually to the state's economy. Commercial fisheries in New Jersey rank among the most productive on the East Coast and in the nation. In addition, New Jersey's recreational fisheries are among the nation's leaders in terms of catch, angler expenditures, revenue generated, and angler participation. NJSGC has a long history of supporting fisheries-related research that assists managers in the development and conservation of commercial and recreational species.

Goal: Healthy fisheries (commercial and recreational) and mariculture industries within New Jersey that harvest seafood responsibly, efficiently, and sustainably.

Strategies:

- ✓ Support research which improves data for fisheries management (including ecosystem-based fisheries management), or develops new technologies or products that are both environmentally responsible and contribute to a competitive and viable mariculture industry.
- ✓ In order to increase our impact in this area we would like to develop an MOA with one of our member institutions to support a fisheries or mariculture extension agent; or, a specialist in the field of wild fish populations. Primary tasks would be to identify ways to minimize threats to fish and fishers, transfer new mariculture technologies that are environmentally responsible, and promote ecosystem-based fisheries management.

Goal: Stakeholders who truly understand the importance of ecosystem health and sustainable harvesting practices to the future of New Jersey's fisheries or mariculture industries and who appreciate the health benefits of seafood consumption will be

more inclined to participate in sustainable management and consumption practices in order help to protect and increase our supply of safe and sustainable seafood.

Strategies:

- ✓ We will work in close coordination with the National Marine Fisheries Service and with the NJ Department of Agriculture Seafood Program to develop educational programs and materials that enhance the public’s understanding of the importance of New Jersey’s seafood industry, its role in the state’s economy, and the importance of a healthy ecosystem for a healthy seafood industry.

HAZARD RESILIENCE IN COASTAL COMMUNITIES

“Hazard resilience” has received an extraordinary amount of attention since August 29, 2005 when the landfall of Hurricane Katrina ushered in a new era in American history. The term “hazard resilience,” which became an important part of the American political, economic, and social vernacular since then refers to a community’s ability to understand, plan for, and respond to a given hazard or set of hazards, whether they are natural or man-made. The recent emphasis on climate change and sea level rise only reinforces what coastal scientists have known for quite some time – choosing to live, work, and recreate in the coastal zone carries with it a set of risks that must be balanced against the economic and social benefits.

The area of hazard resilience is of particular importance in New Jersey due to the high number of risks faced, the density of people living in the coastal zone, and the extraordinary amount of money invested there.

Goal: NJSGC will work to ensure that New Jersey’s coastal communities exhibit an understanding of the unique risks, both near and long term, associated with living, working and doing business along New Jersey’s coast.

Strategies:

- ✓ Support research to assess hazard-related risks and increase the availability and usefulness of hazard-related information and forecasting for citizens, industries, and decision-makers in coastal communities, and also support research which shows how the use of natural features and/or new technologies can help communities prepare for and mitigate the impacts of hazardous events.

Goal: Communities are cognizant of the risks they face, are capable of utilizing all of the relevant information available to understand and plan for those risks and are active in taking steps to reduce risk and minimize exposure.

Strategies:

- ✓ Work with the NOAA Climate Change Program and other public and private sector partners to develop comprehensive education/literacy programs on the immediate and long-term effects of climate-related changes and other hazardous events on human safety and property along the coast, and how to prepare for and survive them.
- ✓ Maintain the partnership with NOAA's National Weather Service to have available integrated demographic and coastal hazard information databases that help measure human vulnerability in specific coastal regions, support hazard-related planning activities, and facilitate disaster relief efforts.

Goal: A culture of preparedness is developed, one in which coastal communities including residents, business owners, and visitors, in addition to awareness and understanding of the risks, are also prepared to take measures to reduce their vulnerability and respond quickly and effectively to hazards as they arise. In short, we think it is important to convey information and response guidance on coastal risks from one end of the temporal scale to the other.

Strategies:

- ✓ Work with NOAA's National Weather Service and the National Ocean Service, MACOORA, and other partners to make hazard-related data and data-derived products available and relevant to support decision-making during crisis events.
- ✓ NJS GC has been a part of and will continue to participate in National Sea Grant coastal hazards sub-group and the newly formed Climate sub-group to identify successful strategies for communicating risk and facilitating response.
- ✓ Our extension activities range from the distribution of rip current awareness brochures and signs to our coastal communities to an Annual "State-Of-The-Shore" press event to participating in our State's and NOAA's sea level rise information gathering and response development.
- ✓ Our coastal processes specialist at Stevens Institute of Technology will continue to promote the use of surge warning systems, inundation models and other flood protection models.
- ✓ NJS GC encourages and disseminates research on dune success, and restoration of salt marshes or other flood protection systems using natural and indigenous plant species that coastal communities can utilize in preparing for coastal hazards.

CROSS-CUTTING THEME: OCEAN, ESTUARINE AND COASTAL ENVIRONMENTAL LITERACY (OECEL)

NJSGC is committed to assuring that New Jersey's citizens and visitors understand, value, and appreciate the state's marine, estuarine and coastal environment and are able to apply sound evidence and science-based information to make well-informed decisions regarding its use, management, and care. NJSGC's education programs respond to the pressing need for oceanic and coastal resource awareness by offering a wide variety of programs and services tailored to the needs of each community of learners and by engaging in partnerships that advance ocean literacy, improved science education and awareness of key marine and coastal issues. At the same time, education at the NJSGC nurtures stewardship by providing education that employs the excitement of experiential learning to foster appreciation and behavioral change.

The majority of the department's efforts are focused on school-aged children and their teachers, and, as such, the department acts as a science education resource and marine and marine-related environmental science content specialist for New Jersey's K-12 schools, informal education centers and after-school and out-of-school time child care centers. This is accomplished through in-school presentations, professional development trainings, curriculum consultations and the development and publication of educational materials disseminated at njseagrant.org. The availability of these educational services are especially critical for educating New Jersey's schoolchildren as marine, coastal and ocean science is not specifically mandated in the state's content standards.

Goal: A marine literate and environmentally aware public that values understands and appreciates New Jersey's marine, estuarine and coastal environment and can make informed decisions regarding its use, management and care becomes a reality.

Strategies:

- ✓ Coordinate and support diverse education programs that foster marine, coastal and ocean literacy and stewardship.
- ✓ Collaborate with state and federal agencies and other partners to build public awareness about critical coastal and marine issues including coastal hazard resiliency and storm preparedness.
- ✓ Provide training and support for pre and in-service formal and informal educators that will improve the ability of educators to teach marine, estuarine and coastal environmental science as well as improve student literacy in science, mathematics, engineering and technology in general.

Goal: A diverse, knowledgeable and adequately prepared workforce is available that can advance understanding of the marine environment and wisely manage its utilization and care.

Strategies:

- ✓ Use NJSGC's strong K-12 and university partnerships to generate opportunities that stimulate interest and attract talent to marine and coastally-related environmental careers.